AMENDMENTS TO THE CLAIMS

The following is a complete listing of revised claims with a status identifier in parentheses, underlining indicating additions and double brackets or strikethrough indicating deletions.

Listing of the Claims:

1-22. (Cancelled)

23. (Previously Presented) A computer simulator implemented method of modeling a fissile system in a neutronics modeling method comprising:

inputting, into the computer simulator, neutronics characteristics of ~~placing~~ at least one first geometric construct;

inputting, into the computer simulator, an indication that the at least one first geometric construct ~~into~~ completely fills a second geometric construct;

performing, by the computer simulator, a criticality analysis of the fissile system including the first and second geometric constructs, the performing including defining at least one neutronic characteristic of the second geometric construct as if the second geometric construct were completely filled with a plurality of the first geometric constructs without inputting the at least one neutronic characteristic of the second geometric construct ~~explicitly placing the first geometric construct throughout the second geometric construct~~; and

~~performing~~ outputting the [[a]] criticality analysis ~~on~~ of the fissile system including the first and the second geometric constructs.

24. (Previously Presented) The method of claim 23, wherein the second geometric construct is a region to be modeled in a neutronics modeling method.

25. (Previously Presented) The method of claim 23, wherein the first geometric construct includes a generally rectangular body having curved surfaces on the generally rectangular body.

26. (Previously Presented) The method of claim 25, wherein the curved surfaces are shaped as a portion of a surface of a cylinder or a sphere.

27. (Previously Presented) The method of claim 25, wherein the curved surfaces are shaped according to quadratic surface equations.

28. (Previously Presented) A method of claim 23, wherein the first geometric construct is formed by forming at least one interstitial region, the first geometric construct being formed by boundaries of the at least one interstitial region.

29. (Previously Presented) The method according to claim 28, wherein the boundaries of the at least one interstitial region are shaped such that the formed first geometric construct is cylindrical or spherical.

30. (Previously Presented) The method according to claim 29, wherein the boundaries of the at least one interstitial region are shaped such that the formed first geometric construct is shaped according to quadratic surface equations.

31. (Previously Presented) The method according to claim 23 further comprising:

obtaining an effective neutron multiplication factor of a modeled system containing each geometric construct, wherein each geometric construct represents an object in a fissile system and has associated neutronic characteristics of the represented objects.

32. (Currently Amended) A computer simulator implemented method of modeling a fissile system in a neutronics modeling method comprising:

inputting, into the computer simulator, neutronics characteristics of ~~placing~~ at least one first geometric construct;

inputting, into the computer simulator, placement data of the at least one first geometric construct in~~to~~ a second geometric construct;

performing, by the computer simulator, a criticality analysis of the fissile system including the first and second geometric constructs, the performing including defining at least one neutronic characteristic of the second geometric construct as if the second geometric construct contains the at least one first geometric construct based on the placement and neutronic characteristics of the at least one first geometric construct; and

~~performing a criticality analysis on the fissile system including the first and the second geometric constructs~~ outputting the [[a]] criticality analysis ~~on~~ of the fissile system including the first and the second geometric constructs.

33. (Previously Presented) The method of claim 32, further comprising:

placing at least one of the second geometric construct into a third geometric construct; and

defining at least one neutronic characteristic of the third geometric construct as if the third geometric construct contains the at least one second geometric construct based on the placement and neutronic characteristics of the at least one second geometric construct.

34. (Previously Presented) The method of claim 33, wherein the steps of claim 33 are repeated N times with Nth geometric constructs so as to form a plurality of levels of embedded geometric constructs and wherein at least one neutronic characteristic of the Nth geometric construct is based on the

placement and neutronic characteristics of each preceding level of geometric constructs and wherein N is a positive integer.

35. (Previously Presented) The method of claim 32, wherein a plurality of the first geometric constructs are placed into the second geometric construct and wherein each first geometric construct of the plurality of the first geometric constructs do not possess identical neutronic characteristics.

36. (Previously Presented) The method of claim 32, wherein a plurality of the first geometric constructs are placed into the second geometric construct and at least two first geometric constructs of the plurality of first geometric constructs spatially overlap and form an overlapping region within the second geometric construct.

37. (Previously Presented) The method of claim 32 further comprising:

rotating the first geometric construct within the second geometric construct; and

defining at least one neutronic characteristic of the second geometric construct based on the placement and the rotation of the first geometric construct.

38. (Previously Presented) The method according to claim 33 further comprising:

obtaining an effective neutron multiplication factor of a modeled system containing each geometric construct, wherein each geometric construct represents objects in a fissile system and have associated neutronic characteristics of the represented objects.

39. (Currently Amended) A computer simulator implemented method of modeling a fissile system in a neutronics modeling method comprising:

inputting, into the computer simulator, neutronics characteristics of ~~placing~~ a first geometric construct;

inputting, into the computer simulator, an indication that the at least one first geometric construct ~~into~~ completely fills a second geometric construct;

~~placing~~ inputting, into the computer simulator, placement data of at least one second geometric construct in~~to~~ a third geometric construct;

performing, by the computer simulator, a criticality analysis of the fissile system including the first, second, and third geometric constructs, the performing including

defining at least one neutronic characteristic of the second geometric construct as if the second geometric construct were completely filled with a plurality of the first geometric constructs without inputting the at least one neutronic characteristic of the second geometric construct, and ~~explicitly~~

~~placing the first geometric construct throughout the second geometric construct;~~

defining at least one neutronic characteristic of the third geometric construct based on the placement and neutronic characteristics of the at least one second geometric construct; and

~~performing a~~ outputting the criticality analysis of the fissile system including the first, second, and third geometric constructs ~~on the third geometric construct including the first and the second geometric constructs~~.

40. (Previously Presented) The method of claim 39, wherein a plurality of the second geometric constructs are placed into the third geometric construct and at least two second geometric constructs of the plurality of second geometric constructs spatially overlap and form an overlapping region within the third geometric construct.

41. (Previously Presented) The method of claim 40, wherein the at least two second geometric constructs do not possess identical neutronic characteristics.

42. (Previously Presented) The method of claim 41, wherein at least one neutronic characteristic of the overlapping region is defined exclusively by a corresponding neutronic characteristic of one second geometric construct of the at least two second geometric constructs forming the overlapping region.

43. (Previously Presented) The method of claim 42, wherein the one second geometric construct of the at least two second geometric constructs forming the overlapping region is chosen based on inherent priority of the one second geometric construct or user input.

44. (Cancelled)

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